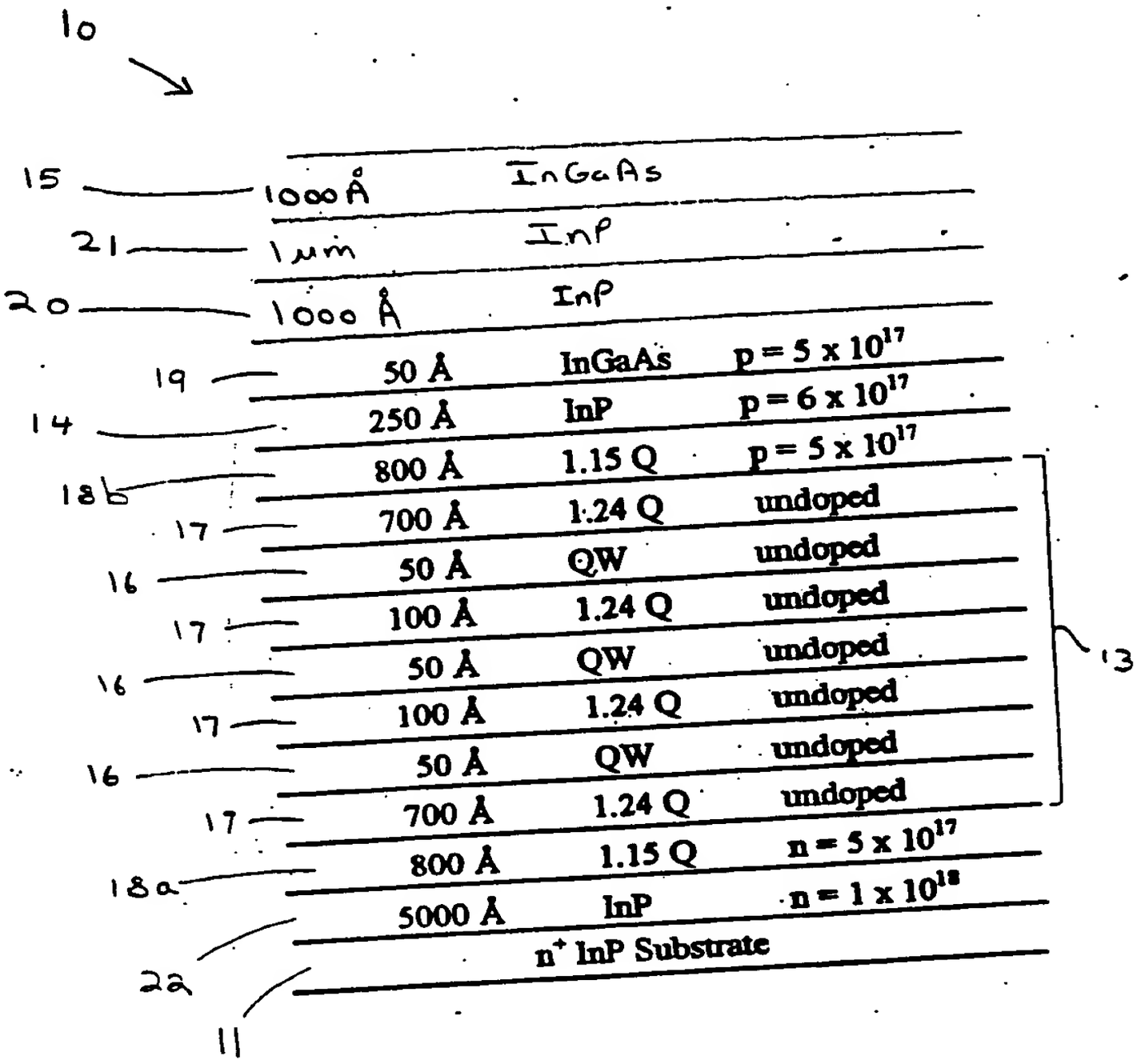
10
15
1000 Å
InGaAs
21
1 µm
InP
20
1000 Å
InP
19
50 Å
InGaAs
p = 5 x 10^17
14
250 Å
InP
p = 6 x 10^17
18b
800 Å
1.15 Q
p = 5 x 10^17
17
700 Å
1.24 Q
undoped
16
50 Å
QW
undoped
17
100 Å
1.24 Q
undoped
16
50 Å
QW
undoped
17
100 Å
1.24 Q
undoped
16
50 Å
QW
undoped
17
700 Å
1.24 Q
undoped
13
18a
800 Å
1.15 Q
n = 5 x 10^17
22
5000 Å
InP
n = 1 x 10^18
n+ InP Substrate
11

Fig. 1

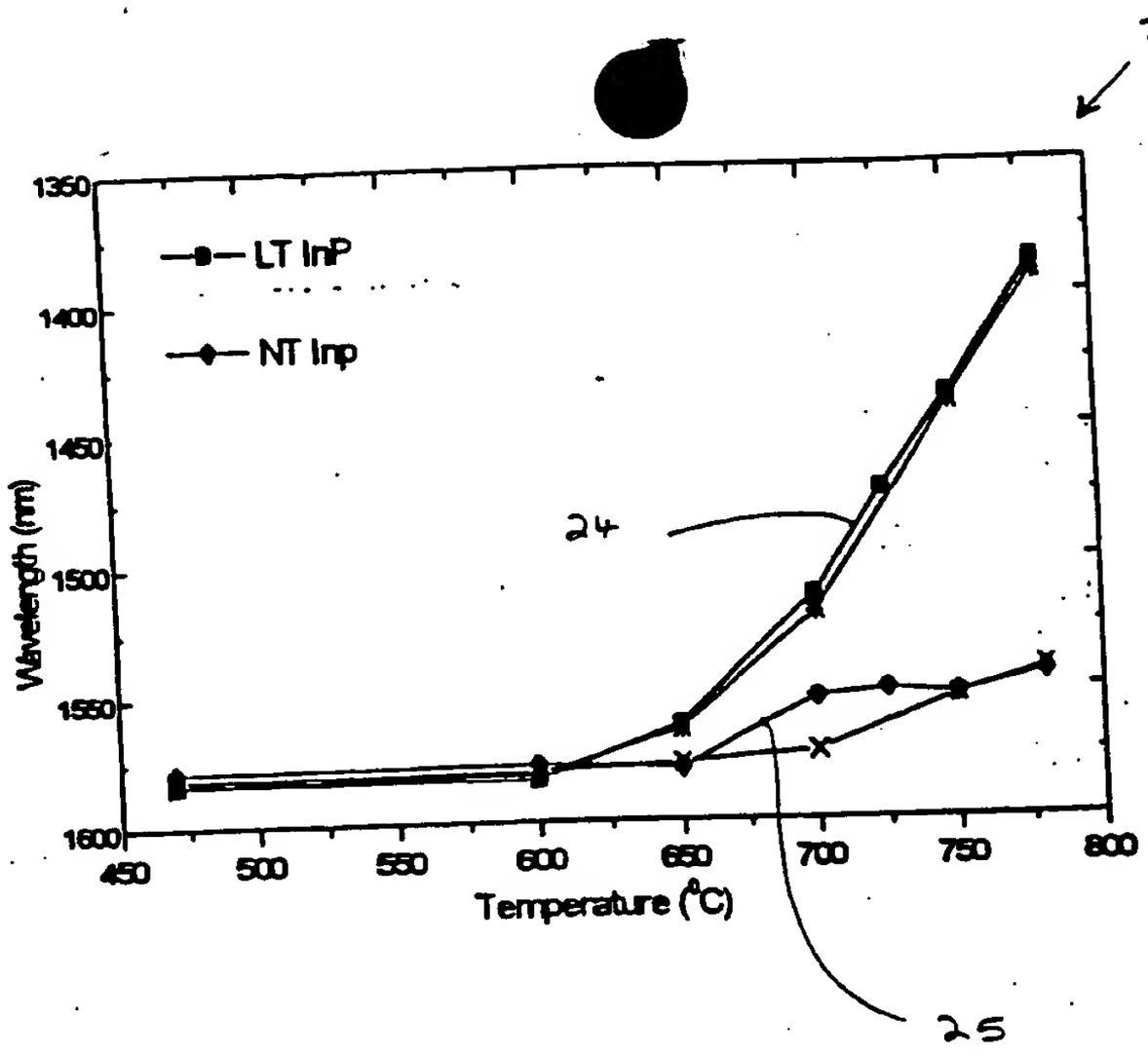
23
LT InP
NT Inp
Wavelength (nm)
1350
1400
1450
1500
1550
1600
450
500
550
600
650
700
750
800
Temperature (°C)
24
25

Fig. 2

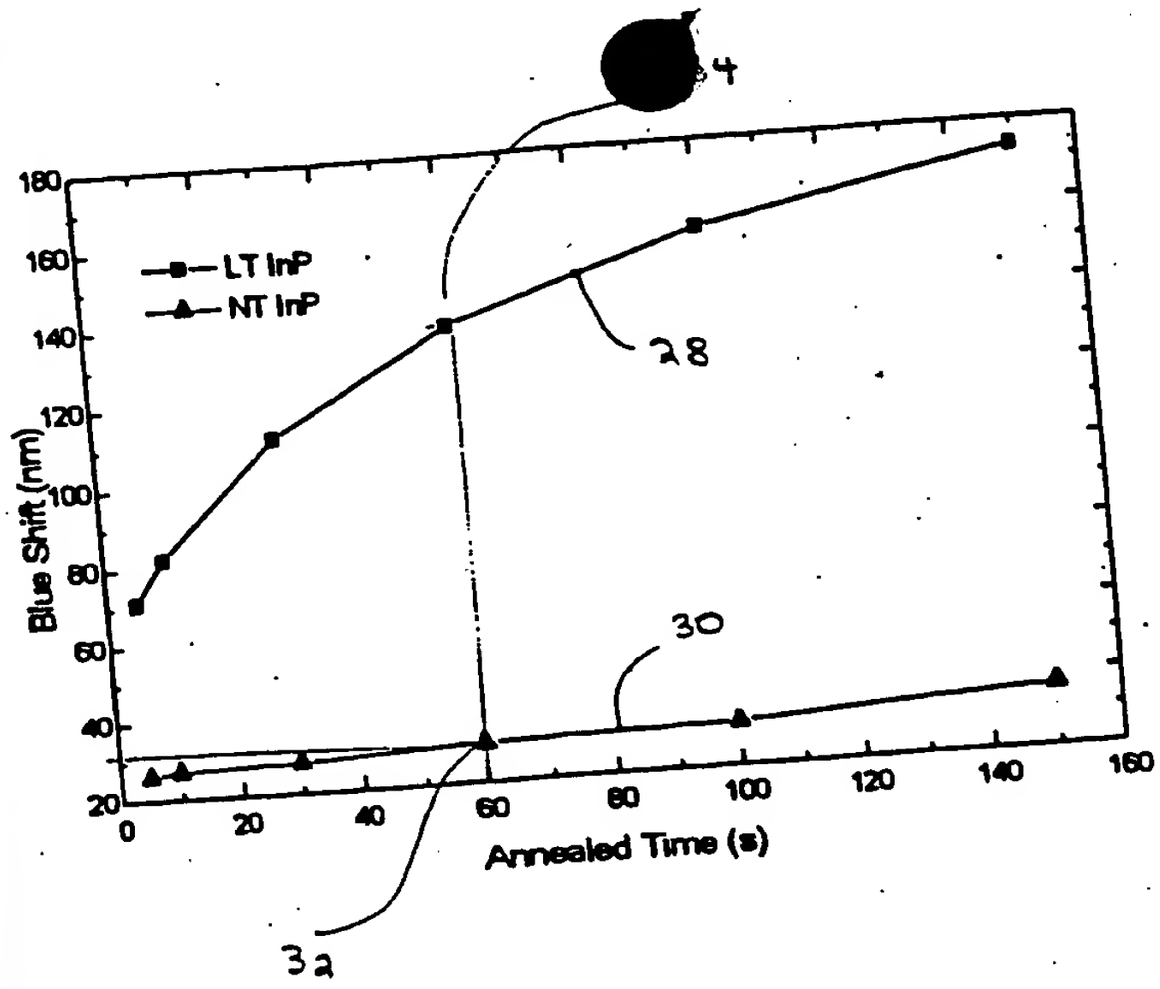
LT InP
NT InP
Blue Shift (nm)
Annealed Time (s)
180
160
140
120
100
80
60
40
20
0
20
40
60
80
100
120
140
160
4
28
30
32
26

Fig.3

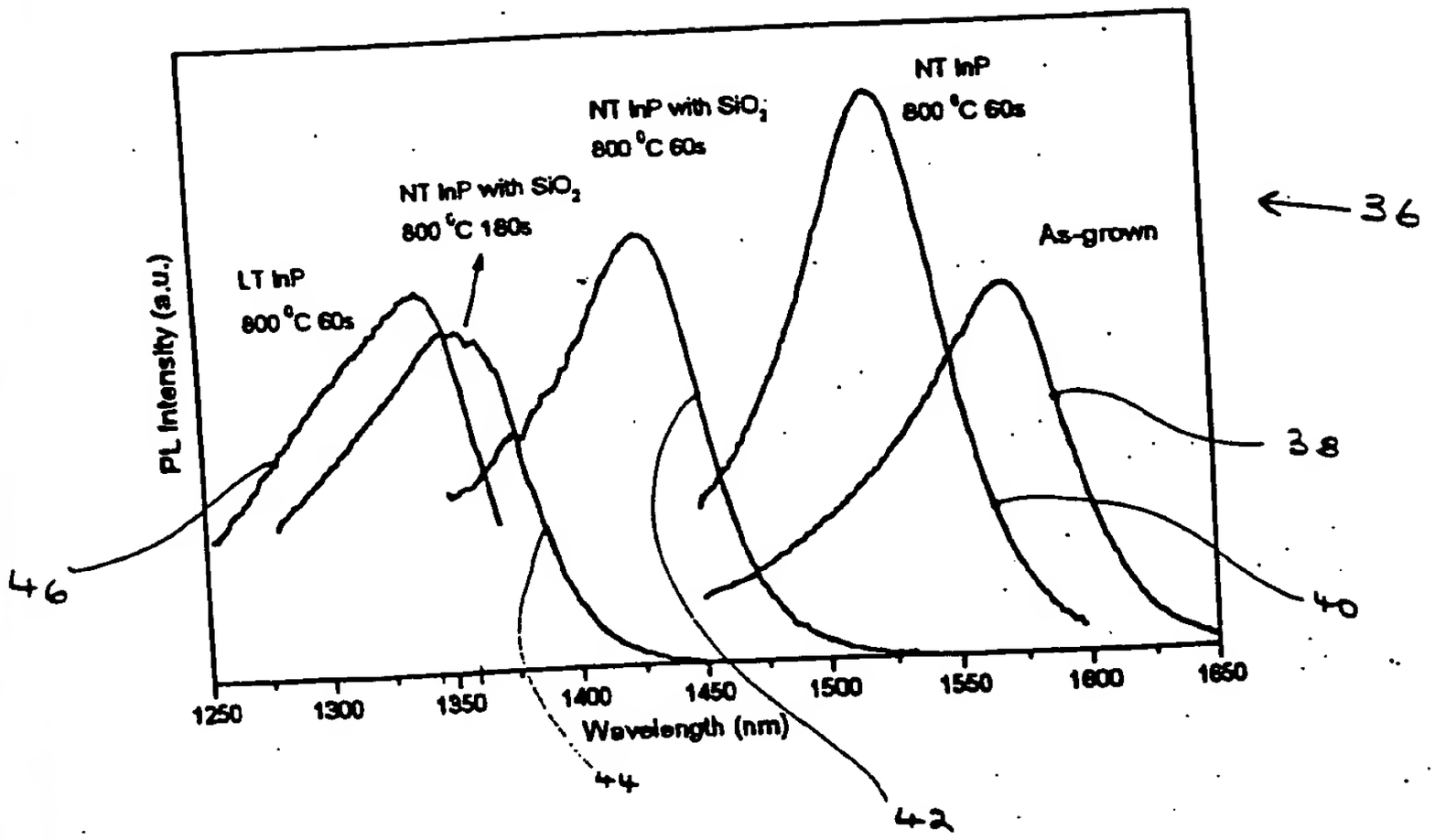
NT InP
800 °C 60s
NT InP with SiO2
800 °C 60s
NT InP with SiO2
800 °C 180s
LT InP
800 °C 60s
As-grown
PL Intensity (a.u.)
1250
1300
1350
1400
1450
1500
1550
1600
1650
Wavelength (nm)
36
38
40
42
44
46

Fig. 4

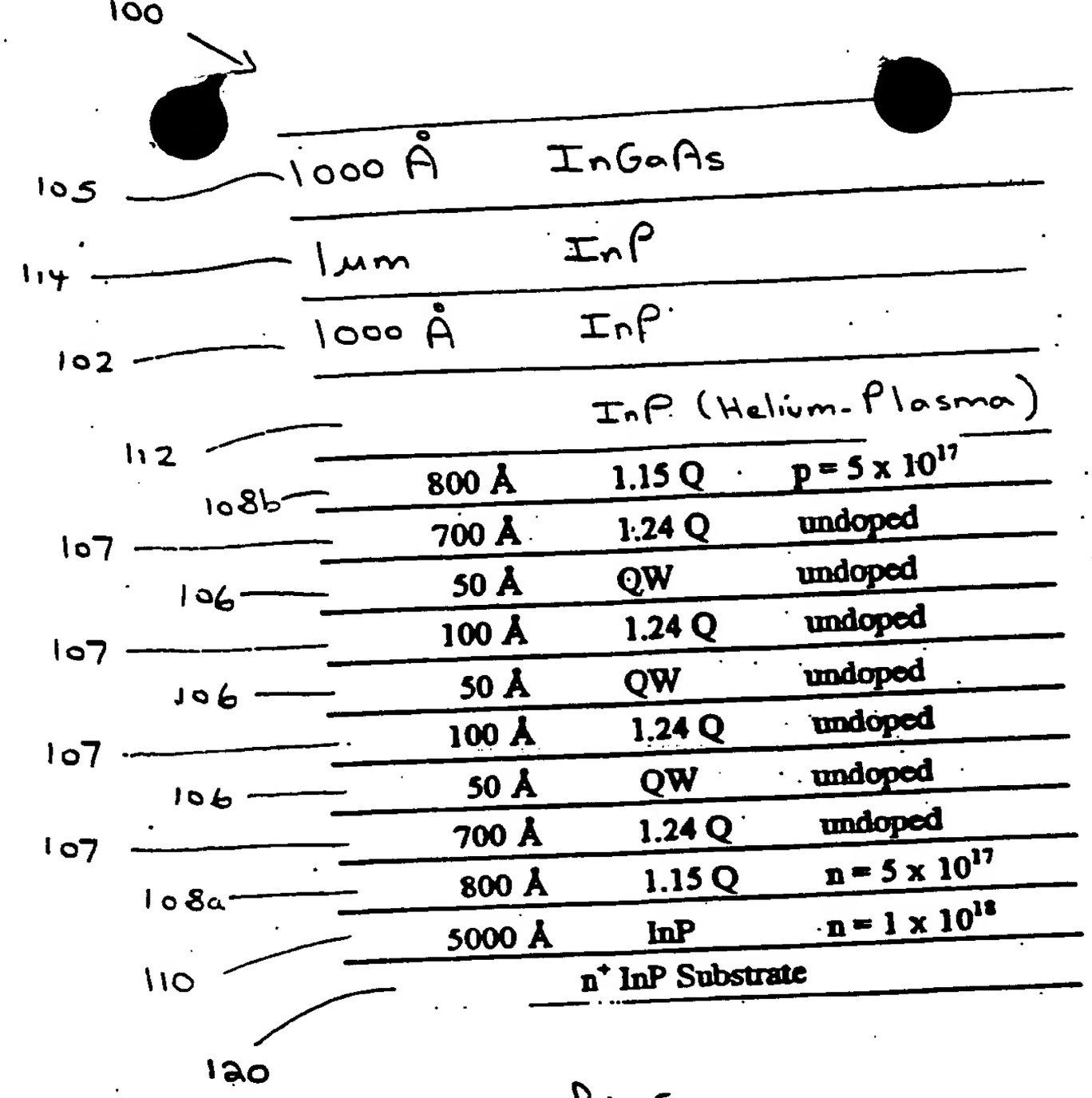
100
105
1000 Å InGaAs
114
1μm InP
102
1000 Å InP
112
InP (Helium-Plasma)
108b
800 Å 1.15 Q p = 5 x 10^17
107
700 Å 1.24 Q undoped
106
50 Å QW undoped
107
100 Å 1.24 Q undoped
106
50 Å QW undoped
107
100 Å 1.24 Q undoped
106
50 Å QW undoped
107
700 Å 1.24 Q undoped
108a
800 Å 1.15 Q n = 5 x 10^17
110
5000 Å InP n = 1 x 10^18
120
n+ InP Substrate

Fig 5a

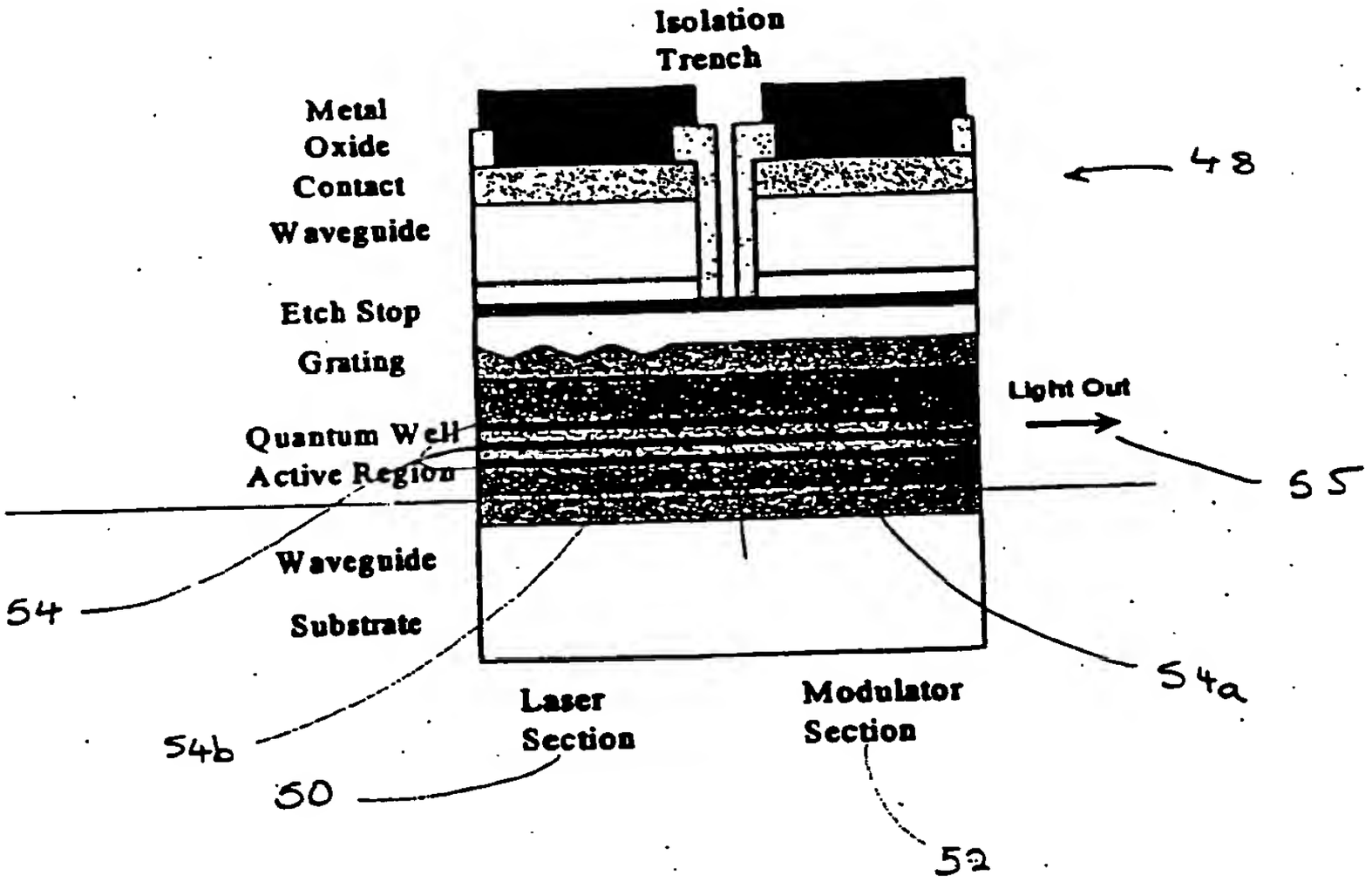
Isolation Trench
Metal
Oxide
Contact
Waveguide
Etch Stop
Grating
Quantum Well
Active Region
Waveguide
Substrate
Light Out
48
55
54
54a
54b
50
52
Laser Section
Modulator Section

fig. 5b

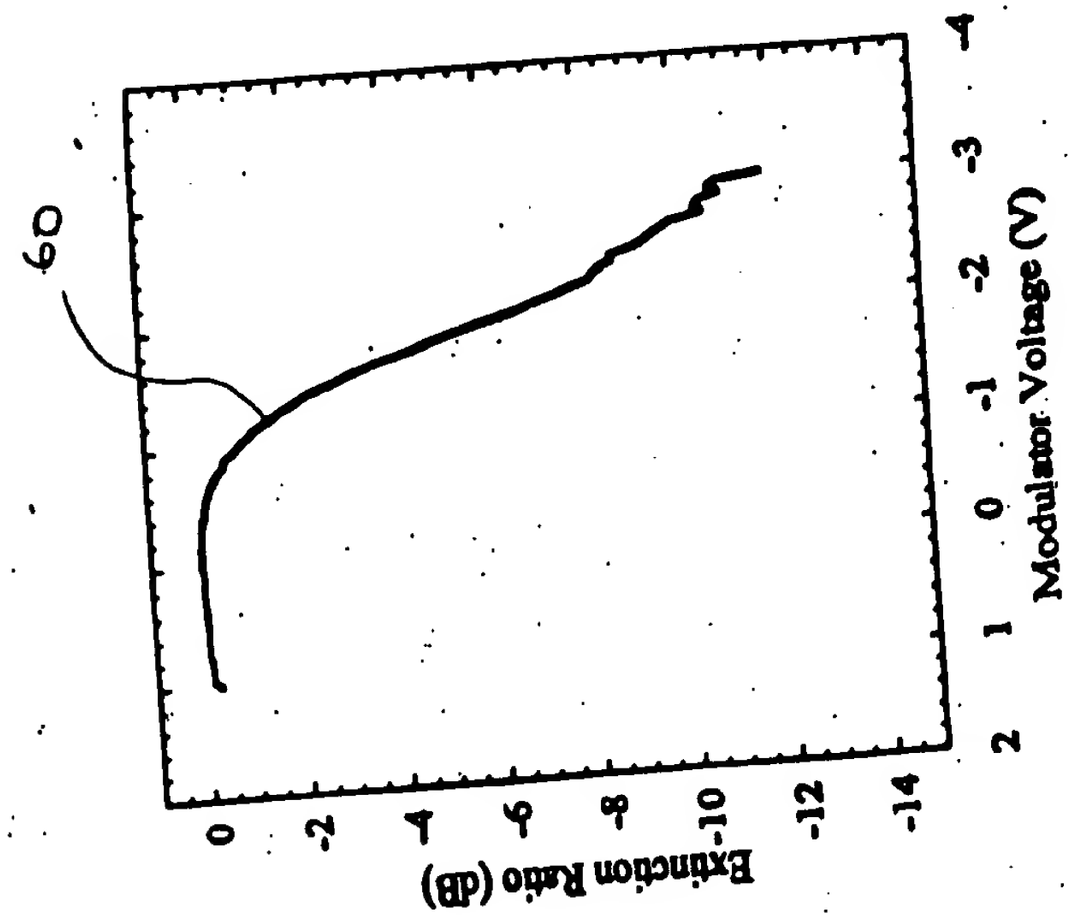
60
Extinction Ratio (dB)
0
-2
-4
-6
-8
-10
-12
-14
2
1
0
-1
-2
-3
-4
Modulator Voltage (V)

Fig. 6

56